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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,173	12/14/2001	Martin S. Dell	Dell 2-4-1-1-5-28	5864
46900	7590	04/20/2006	EXAMINER	
MENDELSON & ASSOCIATES, P.C. 1500 JOHN F. KENNEDY BLVD., SUITE 405 PHILADELPHIA, PA 19102				JAGANNATHAN, MELANIE
ART UNIT		PAPER NUMBER		
2616				

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/017,173	DELL ET AL.
Examiner	Art Unit	
Melanie Jagannathan	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 12 December 2005.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-25 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 19-25 is/are allowed.  
 6) Claim(s) 1-12, 15 and 18 is/are rejected.  
 7) Claim(s) 13, 14, 16, 17 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

- Examiner has considered Amendment after Non-Final mailed 12/12/2005.
- Claims 1-25 are pending.

### ***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 10 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1,8,9,11 of copending Application No. 10/017174 in view of Turner et al.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 8, 9, 11 of application 10/017174 essentially teach the same steps/means as claim 1 of current application.

Even though claim 1 of current application is broadened by omitting certain limitations such as input stage transmits bids to switching stage/crossbar device to request connections through switching stage/crossbar device for routing of data to

output stage, a crossbar device comprising a bid arbitrator configured to determine whether to accept or reject each received bid and a memory for storing one or more accepted cells for same output device, it has been held that the omission of an element and its function is an obvious expedient if the remaining elements perform the same function as before. *In re Karlson*, 136 USPQ 184(CCPA). Also note *Ex parte Rainu*, 168 USPQ 375 (Bd. App. 1969); omission of a reference element whose function is not needed would be an obvious variation.

However, co-pending application 10/017174 does not explicitly disclose amended limitation of one input port can be programmably reconfigured to store data in different numbers of input routing queues that are associated with a single output port and at least one output port can be programmably reconfigured to store data in different numbers of output routing queues that are associated with a single input port.

The claimed at least one input port can be programmably reconfigured to store data in two or more routing queues that are associated with a single output port is disclosed by Turner et al. by packets stored in arrival and departure buffers of the 4 switching elements of input stage and these packets are routed in second and third stages to appropriate departure buffers for outgoing link that lies on path to destination port specified in cell header. Examiner interprets the claimed reconfiguration with disclosure of in each cell time, arrival buffers send grant signals to departure buffer in upstream neighbor element only if it is safe to receive a cell at that time and departure buffer might send a floor indication to arrival buffer if it has no cell to send at that time.

At every cell time, the transmission and reception of cells at the arrival and departure buffers is different. See column 6, lines 8-49.

The claimed at least one output port can be programmably reconfigured to store data in two or more routing queues that are associated with a single output port is disclosed by Turner et al. by packets originating from ports in switching elements of input stage where packets are stored in arrival and departure buffers of the 4 switching elements of output stage and routed on outgoing link that lies on path to destination port specified in cell header. Examiner interprets the claimed reconfiguration with disclosure of in each cell time, arrival buffers send grant signals to departure buffer in upstream neighbor element only if it is safe to receive a cell at that time and departure buffer might send a floor indication to arrival buffer if it has no cell to send at that time. At every cell time, the transmission and reception of cells at the arrival and departure buffers is different. See column 6, lines 8-49.

At the time the invention was made it would have been obvious to implement the methods and apparatus of 10/017174 with configuration of buffers with grant signals and floor indications in arrival and departure buffers, motivation being enabling proper flow control, as shown by Turner et al.

Claims 11, 18 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1,8,9,11 of copending Application No. 10/017174.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 8, 9, 11 of application 10/017174 essentially teach the same steps/means as claim 11 of current application.

Even though claims 11,18 of current application are broadened by omitting certain limitations such as crossbar device comprising a bid arbitrator configured to determine whether to accept or reject each received bid and a memory for storing one or more accepted cells for same output device, it has been held that the omission of an element and its function is an obvious expedient if the remaining elements perform the same function as before. In re Karlson, 136 USPQ 184(CCPA). Also note Ex parte Rainu, 168 USPQ 375 (Bd. App. 1969); omission of a reference element whose function is not needed would be an obvious variation.

Claims 10, 18 of current application are rejected based on the same rationale given for the rejection of independent claims 1, 11, and of current application.

2. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Turner et al. 6,907,041.

Regarding claims 1, 6-8 and 10, the claimed switch fabric comprising a switching stage between an input stage and output stage is disclosed by multistage network, a three-stage network (Figure 3). The claimed input stage is configured to receive the data transmitted from one or more sources and forward data to switching stage is disclosed by source buffers (Figure 3, elements 50, 52, 54, 56) send cells to first stage switching elements (elements 60, 62, 64, 66). See column 5, lines 44-53, column 6, lines 34-36. The claimed switching stage is configured to route data received from input stage to the output stage is disclosed by cells being moved from buffers in input stage to second stage (Figure 3, elements 70,72,74,76) and to third stage (elements 80,82,84,86) based on timestamps of cells. See column 6, lines 8-67, column 7, lines 1-44. The claimed output stage is configured to transmit data received from switching stage towards one or more destinations is disclosed by third stage (Figure 3) outputs to destinations where the multistage stage network routes a plurality of packets between a plurality of sources and plurality of destinations via a plurality of paths passing through these stages. See column 3, lines 31-44, column 6, lines 8-67, column 7, lines 1-44.

The claimed input and output stages have one or more input/output ports respectively is disclosed by switching elements making up first stage (elements 60, 62, 64, 66) have four ports each and switching elements making up third stage (elements 80, 82, 84, 86) have four ports each. See column 5, lines 44-53.

The claimed input stage comprises a plurality of routing queues configured to store data until data is ready to be forwarded to switching stage is disclosed by arrival and departure buffers (elements 90, 92). See column 5, lines 44-53.

The claimed output stage comprises a plurality of routing queues configured to store data until data is ready to be forwarded to one or more destinations is disclosed by arrival and departure buffers in switching elements of each stage including output stage. See column 5, lines 44-53 and Figure 3.

The claimed at least one input port can be programmably reconfigured to store data in two or more routing queues that are associated with a single output port is disclosed by packets stored in arrival and departure buffers of the 4 switching elements of input stage and these packets are routed in second and third stages to appropriate departure buffers for outgoing link that lies on path to destination port specified in cell header. Examiner interprets the claimed reconfiguration with disclosure of in each cell time, arrival buffers send grant signals to departure buffer in upstream neighbor element only if it is safe to receive a cell at that time and departure buffer might send a floor indication to arrival buffer if it has no cell to send at that time. At every cell time, the transmission and reception of cells at the arrival and departure buffers is different. See column 6, lines 8-49.

The claimed at least one output port can be programmably reconfigured to store data in two or more routing queues that are associated with a single output port is disclosed by packets originating from ports in switching elements of input stage where packets are stored in arrival and departure buffers of the 4 switching elements of output

stage and routed on outgoing link that lies on path to destination port specified in cell header. Examiner interprets the claimed reconfiguration with disclosure of in each cell time, arrival buffers send grant signals to departure buffer in upstream neighbor element only if it is safe to receive a cell at that time and departure buffer might send a floor indication to arrival buffer if it has no cell to send at that time. At every cell time, the transmission and reception of cells at the arrival and departure buffers is different. See column 6, lines 8-49.

Regarding claims 2-4, the claimed different sets of data received at an input port from a single source can be stored in two or more different input routing queues is disclosed by assigning a packet passing through system a priority and by handling packets with different priorities differently. Each buffer of switching elements (Figure 3) is replaced by  $m$  buffers where each buffer contains packets of different priority class (Figure 8, element 800). Each source port (elements 801-804) can supply packets to any one of three buffers. See column 8, lines 41-64. The claimed different sets of data to be transmitted at an output port to a single destination can be stored in two or more different output routing queues is disclosed by switching element (element 800) is contained in third stage of multistage network with priority departure buffers to destinations. See column 8, lines 41-64.

Regarding claim 5, the data received at input port from single source can be separated into different sets of data to achieve isolation is disclosed by traffic going to congested outputs are isolated by maintaining separate buffers within switch elements for the three stages. See column 10, lines 11-67, column 11, lines 1-43.

Regarding claim 9, the claimed maximum number of input/output routing queues in each input device is a function of (1) the number of input/output ports and (2) the total number of output/input ports in output/input stage is disclosed by 2 slot arrival buffer and 4 slot departure buffer in switching elements of input stage and output stage.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 11-12, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner et al. (hereinafter referred to as Turner) in view of Angle et al. US 6,519,225 (hereinafter referred to as Angle).

Regarding claims 11-12, 15, 18, the claimed input stage, switching stage and output stage is disclosed by three-stage network (Figure 3). Turner discloses all of the limitations of the claims except for input stage transmits bids to switching stage to request connections through switching stage for routing data, output stage transmits status information about output stage to input stage and input stage is configured to generate bids based on status information. Angle discloses transmit requests from input ports (Figure 1, element 107) to fabric configuration manager (element 110). The fabric configuration manager also receives control information from output ports regarding traffic. See column 6, lines 40-55. The scheduler, as part of fabric configuration manager, goes through grant and accept phases in order to determine whether to grant transmission to input ports. See column 7, lines 39-67, column 8, lines 1-29.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to modify Turner with grant/request scheme through stages of Angle. One of ordinary skill in the art would be motivated to do so for efficient output link scheduling. See column 1, lines 59-67, column 2, lines 1-9.

***Allowable Subject Matter***

7. Claims 13-14, 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 13-14, and 16, prior art of record does not disclose, in single or in combination, status information about output stage transmitted to switching stage by output stage, being per port status information for each output port and status information about output stage transmitted to input stage by output stage being per queue status information for each output routing queue, the per port status information different from the per queue status information for an output port associated with more than output routing queue in combination other limitations of the claims.

8. Claims 19-25 are allowed.

Regarding claim 19, prior art of record does not disclose, in single or in combination, grant/rejection signal explicitly identifying reason for rejecting bid, wherein identified reason is one of a plurality of different possible reasons for rejecting the bid, the input stage is adapted to react differently for different possible reasons for rejecting the bid in combination with other limitations of the claims.

***Response to Arguments***

9. Applicant's arguments filed 12/12/2005 have been fully considered.

Applicant's arguments regarding 112, 1<sup>st</sup> paragraph rejection for claims 1 and 10 have been fully considered and a new double patenting rejection has been submitted.

Applicant's arguments regarding 112, 1<sup>st</sup> paragraph rejection for claims 19 and 25 have been fully considered and are persuasive and subsequently rejection has been withdrawn.

Applicant's arguments regarding 112, 1<sup>st</sup> paragraph rejection for claims 11, 18 have been fully considered and are not persuasive. Applicant argues claim 11 recites output stage is configured to transmit status information about the output stage to the input stage, and the input stage is configured to generate bids transmitted to the switching fabric based on status information about output stage and these features are not present in copending application claims 1, 8-9 and 11.

Examiner appreciates Applicant's argument but respectfully disagrees. Since no specific definition of the status of output stage is given, the limitation has not been given too much weight and Examiner interprets claimed status about output stage to be normal status allowing input stage to transmit bids to switching stage to request connections as claimed in claim 1 of co-pending application.

Applicant's arguments regarding claims 13-14, 16, 19, 21, 22 have been fully considered and are persuasive and claims have subsequently been deemed as allowable subject matter.

Regarding claims 1-10, Applicant argues reference Turner et al. does not disclose amended limitation regarding at least one input port and at least output port can be reconfigured to store data in different numbers of output queues associated with a single input port and different number of input queues associated with a single output port.

Examiner respectfully disagrees. Examiner interprets the claimed reconfiguration with disclosure by Turner et al. of in each cell time, arrival buffers send grant signals to departure buffer in upstream neighbor element only if it is safe to receive a cell at that

time and departure buffer might send a floor indication to arrival buffer if it has no cell to send at that time. At every cell time, the transmission and reception of cells at the arrival and departure buffers is different. See column 6, lines 8-49.

Regarding claims 11-12, Applicant argues Angle et al. does not disclose claimed output stage configured to transmit status information about the output stage to the input stage. Examiner contends Angle et al. discloses in prior architectures, a back pressure signal is typically coupled directly from each of the output ports (Figure 1, element 109) to each of the input ports (element 107).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Jagannathan whose telephone number is 571-272-3163. The examiner can normally be reached on Monday-Friday from 8:00 a.m.-4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham, can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJ  
4/17/06

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